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ABSTRACT

The paper describes the development, by the Center for Vocational and Technical Education (CVTE), of instructional modules for a performance-based system for the teaching of vocational teachers and includes a list of five characteristics distinguishing performance-based teacher education (PBTE) from the more traditional forms. The research base for PBTE curricula development work is outlined. The module development and testing process consists of: module prototype development and review; module revision at CVTE based upon faculty and CVTE staff reviews; preliminary formative testing at one or more sites; revision by CVTE; advanced formative testing of a selected sample of modules; third party evaluation of modules; and refinement of modules by CVTE in preparation for publication. There is a description of each of the general components of the modules: table of contents; title page; introduction; performance objectives; resource materials; learning experiences; and module supplement. A section on areas of concern in the installation of performance-based curricula deals with: identification of competencies; instructional materials; faculty and student roles; interaction with various groups, institutions, and agencies; instructional support; and costs. (PR)

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PERFORMANCE-BASED CURRICULA FOR VOCATIONAL TEACHERS

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PERFORMANCE-BASED CURRICULA FOR VOCATIONAL TEACHERS

Vocational teacher educators have the primary responsibility for preparing and upgrading professionals in the vocational portion of career education. The performance of teachers--their competency in stimulating and facilitating the growth of concepts, habits, skills, and attitudes related to successful career development of students--is generally assumed to be a function of the quality of their own preparation. Unfortunately, according to teacher educator leadership, most of the presently available methods and procedures do not permit the teacher educators to attain the level of effectiveness to which they aspire.

Teacher Needs

Although teacher educators espouse the need for developing vocational curricula based upon students' potential job requirements, their own courses are seldom based upon the teacher's actual job requirements. Although these teacher educators may emphasize that more attention be given to individualization of instruction for vocational students, their own classes are typically conducted in a lock-step manner. Pre-service and inservice teachers are often told that they should identify specific objectives and should plan learning experiences which relate to these objectives while the courses they themselves are enrolled in do not reflect this kind of analytical planning. Finally, although evaluation of tangible performance is often mentioned as being important in secondary and post-secondary occupational education, the teacher educator all too often focuses on purely academic assessment (e.g., term paper or essay test) in his/her own courses.

The future of vocational teacher education is essentially no different from that of general teacher education. Increased emphasis on systematic curriculum development is necessary to insure that more relevant vocational teacher education

programs evolve. There is, however, a concern which appears somewhat unique to vocational teacher education. This is related to the efficiency of program operation. Currently, many universities and colleges provide vocational teacher education by service area (i.e., Agricultural, Business and Office, Distributive, Health Occupations, Home Economics, Technical, Trade and Industrial Education) in separate departments taught in separate courses. While this appears logical in various technical subject matter areas, in the professional vocational teacher education area serious questions can be raised regarding overlap and duplication of effort. It has been strongly suggested by many that universities "provide across-the-board vocational teacher education courses emphasizing commonalities with respect to content, methodology, and socio-legal consideration (Simpson and Ellis, 1971)." Moreover, research conducted at The Center for Vocational and Technical Education (Cotrell and others, 1971-72) has revealed that over 90 percent of the professional vocational teacher competencies are common across two or more service areas. This research will be discussed later.

It appears then that vocational teacher education programs can increase their efficiency by providing "core" experiences--experiences common across various vocational service areas. Hopefully, offerings of this type would reduce teacher education costs and at the same time aid in the integration of commonalities associated with vocational teacher education. Unfortunately, the gap between research and implementation is indeed wide. Universities and their respective departments are not altogether pleased with the prospect of what they might term "consolidation" and "loss of departmental autonomy." The history and tradition of separatism has left its mark on many vocational teacher educators. In light of present conditions, it appears most fruitful for "core" experiences and offerings to be developed and tested by an outside agency. This would maximize acceptance by members of the respective service areas since partiality would not be given to one area over another.

In the above discussion, several areas of need have been mentioned. One is the need for teacher education to have a more sound empirical base which will, in turn, improve program relevance. A second focuses on the necessity of implementing research findings and making provision for their integration into functioning programs. A final need centers on the reduction of inefficiency associated with vocational teacher education programs. This is concerned with overlap and duplication of teacher education offerings across the various vocational service areas.

It is apparent that minor modifications will not suffice to prepare professionals for their respective roles. Traditional practices need to be displaced by a more systematic approach to professional development; one which focuses on eliminating many of the present teacher preparation practices and replacing them with a more relevant instructional environment. It was for this reason that CVTE decided to focus on the development of instructional packages or modules which would fit into a performance-based system for vocational teachers.

What then are the parameters of performance-based teacher education (PBTE)?[1] **The statement published by AACTE in 1971 provides a resonable set of statements in this regard (Elam, 1971). This AACTE publication specifies certain elements that are considered generic to any program that may be defined as being performance-based by the AACTE Committee on Performance-Based Teacher Education. The Center's Performance-Based Curricula Program staff have chosen to use these guidelines in the development of PBTE materials. The five elements that appear to distinguish PBTE from other programs are:**

1. Competencies (knowledge, skills, behaviors) to be demonstrated by the student are:

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[1] For purposes of this presentation "performance-based" and "competency-based" are considered to be synonymous.

a. derived from explicit conceptions of teacher roles,

b. Stated so as to make possible assessment of a student's behavior in relation to specific competencies, and

c. made public in advance.

2. Criteria to be employed in assessing competencies are:

a. based upon, and in harmony with, specified competencies,

b. explicit in stating expected levels of mastery under specified conditions, and

c. made public in advance.

3. Assessment of the student's competency:

a. uses his/her performance as the primary source of evidence,

b. takes into account evidence of the student's knowledge relevant to planning for, analyzing, interpreting, or evaluating situations or behavior, and

c. strives for objectivity.

4. The student's rate of progress through the program is determined by demonstrated competency rather than by time or course completion.

5. The instructional program is intended to facilitate the development and evaluation of the student's achievement of competencies specified.

Several additional elements are related and desirable characteristics of PBTE programs. These include: (1) instruction is individualized and personalized; (2) the learning experience of the individual is guided by feedback; (3) the program as a whole is systematic; (4) emphasis is on exit, not on entrance requirements; (5) instruction is modularized; (6) the student is held accountable for performance. Although these elements are implied aspects of PBTE, many have been associated with sound instructional practice for some time.

Research Base for PBTE Curricula

The current PBTE curricula development work is based upon a series of studies in the project "Model Curricula for Vocational and Technical Teacher Education" which were conducted at the Center under the direction of Dr. Calvin Cotrell. The objective of the research project was to determine the professional (pedagogical) performance requirements for vocational and technical teachers and the differences in requirements among the various services. Research was divided into two phases.

Phase I was concerned with the identification of performance requirements of teachers of conventional programs in agriculture, business, distributive, health occupations, home economics, technical, and trade and industrial education. Initially the Center staff conducted a literature search to identify work that had been done which would have a bearing upon the study. Next an occupational analysis of the competencies required by vocational teachers was conducted. Occupational analysis (introspection and interview) was conducted with a selected sample of professionals. Resource persons consisted of master teachers and teacher educators with experience in the teaching areas being studied. The analyses from the seven areas were then merged.

As a result of the analysis, a preliminary list of 237 tasks was developed. These tasks were, through expert judgment, placed into ten categories. The categories included: Planning of Instruction; Execution of Instruction; Evaluation of Instruction; Management; Guidance; Public and Human Relations; Student Vocational Organization; Professional Role; General School Activities; and Coordination.

Tasks were then examined and rated by a panel. The 21-member panel representing each of the seven services and 19 states was selected by the Center staff with recommendations from the USOE, Division of Vocational and Technical Education, and other leaders in the field. The group examined and rated the tasks and

identified important common and unique tasks by service area. It was found that 94% of the tasks were common across the seven service areas. Additionally, 226 of the 237 tasks were deemed important to the successful vocational teacher. The ten categories were confirmed as being relevant.

Next, a national survey of vocational teachers was conducted. Teachers were asked to identify incidents which were critical to their success. As a result of this survey, 30 tasks were added to the list giving a total of 256 competencies. One hundred and forty existing competencies were verified as being important to the successful teacher (Cotrell and others, 1971a, 1971b).

Phase II of the research project was concerned with the identification of performance requirements for teacher coordinators of cooperative programs in off-farm agricultural, office occupations, distributive, wage earning home economics, trade and industrial, and special needs education. A task analysis was again conducted after a literature search was made. This analysis was done on a small scale and involved Center staff and small groups of teachers. Based upon this analysis a preliminary list of teacher coordinator tasks was developed. It consisted of 385 tasks including the ones identified in Phase I of the project.

At this point, 300 persons nominated by their respective state supervisors as outstanding teacher coordinators were chosen to examine and rate the tasks. Fifty persons from each of the aforementioned service areas were asked to rate them in terms of their importance to the successful teacher coordinator. Analysis of data revealed the important common and unique tasks by service area. All were deemed to be important by the group and 92% of the tasks were of common importance across two or more service areas.

Next, a randomly selected sample of the 300 raters was brought to the Center for a review and clarification meeting. Twenty-nine outstanding teacher coordinators reviewed the various tasks and clarified ratings of them for the project staff at points where questions were raised. At this time, one of the tasks

was eliminated. Next, the findings of Phases I and II were merged and a set of performance-oriented general objectives was developed. These objectives, which specified the task, general criteria, and general standards of performance, constitute a base for the development of teacher education curricula (Cotrell and others, 1972a, 1972b, 1972c).

The following will serve to exemplify the relationships between categories, and competencies:

Category B: Planning of Instruction

Representative Competencies:

* Determine Student Needs and Interests
* Write a Lesson Plan

Category C: Execution of Instruction

Representative Competencies:

* Conduct Field Trips
* Lead Group Discussions
* Introduce a Lesson

Suggested criteria for each of the 384 competencies are provided in Report V (Cotrell and others, 1972c).

Module Development and Testing

In 1971 work was initiated to develop curricular materials especially designed for use in implementing and conducting performance-based vocational teacher education programs. These curricular materials are in the form of individualized learning packages, or modules, each of which has as its base one or more of the 384 competencies previously described relative to the research base for the PBTE Curricula.

In order to insure that the final product (modules) embodies the unique insights of practicing teachers and teacher educators and is acceptable to potential users a cooperative approach was taken in the development and testing of modules. Each module was developed in cooperation with persons at institutions and agencies representative of those who will eventually use it.

Module format and content have been materially influenced by faculty inputs. It is recognized that a cooperative venture takes more time and effort than in-house development, particularly in terms of coordination and liaison. However, the program staff feel that products developed in isolation may not have adequate utility in a real world setting. By working cooperatively with institutions and agencies in the development of modules, the probability of acceptance and use by professional vocational education personnel is greatly increased.

In January 1971, a set of criteria was established and an initial selection of potential prototype development and test sites (vocational teacher education institutions) was made. This was followed by visits by CVTE to leading candidates. The University of Missouri (at Columbia, Missouri) and Oregon State University (at Corvallis, Oregon) were finally selected. The State Director of Vocational and Technical Education in the Missouri State Department of Education, the Dean of the College of Education and the Chairman of Practical

Arts, Vocational, and Technical Education at the University of Missouri, the State Director for Vocational and Technical Education of the Oregon State Department of Education, the Dean of the College of Education and the Director of the Vocational, Adult, and Community College Education at Oregon State University, and the Director of CVTE were signatories to the cooperative agreement as of August 31, 1971. The agreement provided for a Coordinating Board to periodically meet to make key decisions for operational problems, and a Review Board to evaluate progress. At CVTE Columbus, R and D Specialists were employed, oriented, and sent to these universities to act as CVTE site liaison with the 2.4 FTE faculty and administration at each site.

Module Prototype Development

At the University of Missouri there were eighteen teacher educators (TE's) involved in module prototype development. These vocational teacher educators represented the areas of Agricultural Education, Business Education, Distributive Education, Home Economics Education, Industrial Education, and there were 3 EPDA Fellows involved. At the two cooperative agreement sites, site personnel were in daily contact with administrators and TE's. With the approval of and as coordinated with CVTE-Columbus and the administration, these Center site personnel worked with TE's in the development of prototype modules. Since September of 1971 some 120 modules have been written and reviewed at the Missouri and Oregon Sites and reviewed at The Center. General procedures utilized in module development were quite similar at each of the two cooperating institutions. For the purposes of this discussion, however, attention will be focused upon the eleven steps of module development employed at the University of Missouri Site.

The first step consisted of the Center site team and the eighteen faculty members meeting in a large group to review and react to the conceptual framework for a given category (this relates to the heading given to a group of

competencies; for example, instructional planning, guidance, coordination, etc.). At this time tentative objectives and module titles were discussed. These meetings could best be described as brainstorming or no holds barred types of sessions. Faculty members were encouraged to provide constructive criticism when they felt it would provide for the development of more effective learning packages. At times these sessions were rather lengthy and involved, but finally each ended with faculty consensus on what modules were to be developed. At this time teacher educators were also asked to indicate modules on which they would prefer to work as a member of a writing team.

The large group was then divided into writing teams. Typically the large group mentioned in Step 1 was divided into three or four small writing teams with a Center team member working with each small group. The small teams were organized with all service areas being represented where possible. The writing teams would meet to develop objectives and identify potential resources for their module. Simultaneously there were other writing teams at Step 2 and therefore at any given time three or four modules were under development.

As a third step the Center site team member would then take the input received from the writing team meeting in Step 2 and rough out the introduction and first learning experience for the module.

In Step 4 a small writing team would review the work completed in Step 3 by the Center staff and then identify additional learning experiences, resources and the module assessment. As you can see, the faculty served as reviewers and sources of information rather than module writers as such.

In the fifth step of module development the Center site team member used the input received from the writing team review in Step 4, to rough out the remainder of the module, consisting of the remaining learning experiences and assessment.

As a sixth step the same small writing team referred to in Step 4 would then review the entire module and make suggestions for revisions.

In Step 7 the Center site team member would then revise the module based on the input received from his writing team.

After the revision, the module was sent to a second small writing team for review. This writing team in Step 8 was involved in the original conceptualization in Step 1 and provided input from a group that was knowledgeable about the module and at the same time able to view the module from a different perspective than the group involved in the day to day writing of the module.

As the ninth step the Center site team member revised the module incorporating the input received in Step 8 from the second review team.

Following this revision, the module was then reviewed by a TE review team made up of at least one representative from each of the vocational service areas. Module review forms were utilized which asked for an evaluation of each module component as well as for an overall evaluation of the module as a learning package. At this point a decision was made as to whether the module should be released as a completed prototype. There were three alternatives after faculty review of a module:

- Release with no revision. This alternative was chosen if only minor revisions were recommended by faculty (e.g., changes in phraseology, punctuation, checklist items, etc.).
- Release after revisions have been made by writing team. This alternative was chosen when a major revision was recommended (accompanied by suggestions for revision) by one or more TE reviewers. Recommendations might include deletion or redirection of a learning experience or objective and had to be acceptable to both site R and D specialists in terms of contributing to module quality.

- Revision and re-review. This alternative was chosen when more than half of the TE reviewers recommended major revision and/or indicated they would not use the module. Revision included major work such as redoing completely or adding a learning experience. The module was then recycled through faculty reviewers. Assuming that the module had no serious weaknesses, as the final step in the development process at the site the module was then forwarded to the other site and to the Center. At the other site, the module was reviewed by a TE review team (composed of representatives from each vocational service area) and forwarded to the Center along with the faculty reviews of the module.

Upon receipt of the prototype module with accompanying reviews from both sites, a Center review team consisting of Center staff members examined it independently and a synthesis of reviews was developed. The Module Review Report was used in conjunction with this review to insure that agreement was reached regarding revisions (if any) to be made. Decisions relative to module disposition correlated with deficiencies noted on the form. This synthesis process took into account TE reviewer input as well as CVTE staff input. Changes which were subsequently made focused on enhancement of the module's content and face validity since reviews focused on module usability and the extent to which it "delivered" on competencies identified in previous research. Emphasis here was placed upon team input and multiple checks so that changes made to modules would enhance their effectiveness and acceptability. During the revision process, a Checklist for Review was employed which served as a standard for revisers and for those who released the revised module for testing.

Preliminary Formative Testing

Following revision of the module at The Center, the module was scheduled for testing at one or more of three sites. In addition to testing opportunities

at the Missouri and Oregon Sites, there existed an unmet requirement for testing modules especially appropriate for inservice teachers in an off-campus situation. A joint agreement between CVTE and Temple University (Philadelphia, Pennsylvania) and the Pennsylvania Department of Education was entered into as they were able to meet this particular need in a timely manner.

The product evaluation design ultimately focuses on the extent to which each module which is tested meets explicit standards. Conclusions derived from evaluations conducted at this point are, by necessity, quite tentative since they reflect the ongoing developmental phase of the program. Evaluation during formative development is divided into two phases: preliminary and advanced. These two phases were deemed necessary because it was felt that each module should be examined as to its usability and acceptability prior to the time that experimental data are gathered. The preliminary phase is a feasibility test wherein modules are utilized by teacher educators (TE's). Answers are sought for the following questions:

Do teacher educators administering each module perceive it to be an effective teacher/learning device?

Do teachers in training taking each module perceive it to be an effective teaching/learning device?

Do teachers in training taking each module achieve mastery of learning experience objectives?

Do teachers in training accept each module as having sufficient depth of content material?

Preliminary formative testing begins at a test site when a reviewed and synthesized module is received from the Center. At this point, TT's (teachers in training) are selected to participate in the test. Every effort is made to have TT's represent a cross-section of the various vocational service areas; however, due to scheduling constraints this is not always possible. A minimum

of ten TT's at a site must receive the module. Concurrent with or prior to student selection, TE's (teacher educators) are selected to conduct the field test. Checks are then made to be sure that appropriate facilities and resources are available. At a scheduled time, TT's receive the module under the supervision of the faculty member. In order to maintain control of the field trial environment a set of specific Guidelines have been established. Copies of these Guidelines are furnished to the sites so that test condition variations may be held to a minimum.

Data are gathered by means of three instruments. Upon completing the module, each TT fills out a Module Reaction Form which contains questions about the strengths and weaknesses of the modules and the worth of different parts of the module. Likewise, the TE provides his reactions regarding the strengths and weaknesses of the module on a Module Field Test Report. The TE also completes a Module Evaluation Form which tells what percent of the TT's successfully completed any learning experience within a given module. Information is also gathered regarding how many TT's attempted the final assessment without taking the module and how many of them successfully completed it. Decisions regarding revisions to be made to modules are based upon information from all three evaluation forms plus additional reactions obtained from the Coordinator of Field Testing, the TE and TT's.

As modules are undergoing testing at the designated sites, the test process is monitored by the Coordinator for Field Testing in order to check on effects which might not be recorded on the evaluation forms. Checks are made with TE's and TT's as necessary to obtain meaningful feedback data which can serve as input to module revision and installation package refinement. Periodically, checks are made of the testing process through observation and discussion with TE's and TT's. The Testing Coordinator for each site follows up comments made on forms which need clarification. He/she is also sensitive to the potential

problems TT's may have in module administration since he works closely with them on TT and equipment scheduling.

Audio Tapes of Face-to-Face Feedback from resource persons and students using modules are used to provide feedback regarding all phases of module testing and their behavioral effects from both resource persons and TT s. They provide information and insight about problems associated with module administration, content, ability to provide behavioral changes and the accompanying resources and assessments. Testing coordinators interview one resource person for each module tested and two TT's for each of several selected modules. A random sample of 25% of the modules are used for TT audio taping.

The strength of performance standards used in formative testing is due to the fact that ratings from the forms are both objective and subjective; and the data from each form have unique characteristics as well as characteristics which overlap. Data from each of the forms can be judged independently from one another, or they may be used in conjunction with each other. The forms provide program staff with means for assessing the content and teaching effectiveness of modules taken by TT's, as well as for the TE's who use them.

A final aspect of the preliminary formative phase deals with module psychometric refinement. Under subcontract with California Testing Bureau, a subsidiary of McGraw-Hill, psychometric refinement of each module is being conducted. CTB refines the objectives in each module after determining how well module components (objectives, learning experiences, assessments) align with each other. Further, CTB annotates each module to identify problems associated with its specific content. These annotations and refinements include changes in the assessment instruments, where necessary.

Following preliminary formative testing at one or more sites and module psychometric refinement work, each module undergoes another revision by CVTE.

This revision is conducted in a manner similar to that accomplished after prototype development. In this case, however, emphasis is placed on revision specific noted discrepancies with revision based upon test data, inputs from teachers in training and teacher educators who have used the module, and the inputs for module psychometric refinement.

Advanced Formative Testing

In order to insure that the product elements (modules) will be adequately prepared for summative testing and release, more in-depth trials of materials will be conducted. Some testing will be of an experimental nature and is to be conducted for a selected sample of those modules under development. Other testing will be conducted at selected career teacher education locations. Results of the experimental trials will serve as a basis for decisions regarding the extent to which modules must be modified prior to Summative Testing. Relevant feedback from the experimental testing will be incorporated into module format and content standards so that modules prepared for summative testing are of the highest possible quality for the given time and resources constraints.

Summative Testing

Summative testing will consist of two basic components. A third party evaluation of curriculum products will be funded and monitored by NIE. This evaluation will be followed by module refinement based upon third party evaluation data and information received from career teacher education test sites.

In conjunction with module development and testing, supporting materials are being developed. An "Orientation to Modularized Instruction" booklet will provide students and faculty with basic information about modularized instruction. A "Module Development Handbook" building upon experiences gained through

module development efforts is being designed for use by teacher educators who desire to develop modules for other instructional areas.

In summary the module development and testing process consists of:

- Module prototype development and review at the cooperating sites.
- Module revision at CVTE based upon faculty and CVTE staff reviews.
- Preliminary formative testing at one or more sites.
- Revision by CVTE.
- Advanced formative testing of a selected sample of modules.
- Third party evaluation of modules.
- Refinement of modules by CVTE in preparation for publication.

Description of Performance-Based Teacher Education Modules

Each of the 118 modules (individualized learning packages) consists of the following components:

Table of Contents

Title Page

Introduction

Performance Objectives

Resource Materials

Learning Experiences

Module Supplement:

Each of these components is detailed in the paragraphs which follow.

Title Page

The first page of the module following the Table of Contents is the title page, consisting of the module title, the prerequisites and directions for the learner.

The Module Title contains an action verb and reflects the teaching competency as indicated in the terminal objective.

The Prerequisites indicate the competencies that must be attained before starting the module. Prerequisite modules are kept to a minimum.

The Directions introduce the learner to the sequence of module activities and orient him to accomplishment of the performance objectives. They also provide him with a means of trying to "test-out" of the module if the learner is so inclined.

Introduction

The introduction establishes the frames of reference for the entire module. It clarifies the relationship of this particular module to other modules and

to the entire teacher education program, defines important terms, and motivates the learner by explaining the importance of the competency the module is designed to develop. Although short and concise, the introduction includes enough information material to provide the learner with an overview of the purpose and content of the module.

By including a clear orientation to the terminal objectives or competency to be achieved upon completion of the module, the introduction aids the learner, with the help of his resource person, to decide whether the module is applicable to his needs at this time in his teacher education program.

Performance Objectives

Performance objectives are statements describing:

(1) the activities that a learner will be able to perform;

(2) the conditions under which the activity will take place, and

(3) the criteria for assessing whether or not the desired level of performance has been attained.

Performance objectives describe observable measurable learner characteristics. Therefore, they focus on the learner's ability to demonstrate the desired teaching behaviors, rather than only to have knowledge (cognition) of these behaviors.

Each module contains two types of performance objectives. The first type is a terminal objective which is a statement of the competency the learner can expect to demonstrate in the teacher role upon completion of the entire module. The second type consists of enabling objectives, which are statements of the behaviors needed to achieve the terminal objective. All of the terminal objectives for the modules are derived from the general objectives, which were generated during prior Center research.

Resource Materials

Resource materials for a module are the supporting printed materials and media needed by the learner to complete the learning experiences. Whenever possible and practical, the resource materials are included with the module. For ease of reference, all resource materials cited within the learning experiences are listed on a Resources List at the beginning of the module.

Learning Experiences

Each learning experience in the module begins with a complete statement of its performance objective, including the conditions and criterion, followed by the learning activities and evaluation. Alternate and/or optional learning activities are also provided whenever possible.

The performance objectives set the parameters for the learning experiences, which, in turn, help the learner develop the competency specified by the terminal objective. Thus, the learning experiences and the performance objectives go hand in hand and are sequenced so that they progress from the initial stage (the presentation of the new concept, attitude and/or skill), to the application stage (the simulation and/or role playing phase), and finally terminate in a "real world" setting--that is, the competency is performed in an actual school setting. At this point the learner is ready for the assessment of his/her teaching competency which the module was designed to develop.

The activities of a learning experience may involve the learner in reading, viewing and/or listening to prescribed media or engaging in some form of teaching performance. In the margin to the left of each learning experience, a key action verb is provided to indicate to the learner the nature of the activity in which he/she will be involved. In some learning activities, the learner observes or participates in an educational event or activity. A particular interview, a private conference, or a seminar activity may also be included. Such activities assist

the learner to attain the performance objectives for which the learning experience was designed.

Feedback in a learning experience may come from a variety of sources, ranging from a self-test to feedback from peers, a resource person, or others who have observed the learner perform the competency. There may be a written test, provided with a key to facilitate a self-check, or a rating instrument which the learner or others use to evaluate the performance. The feedback materials provide objective checks for the learner as he progresses through the module. The learner is given clear directions as to how, when and where these checks are to be administered, along with the necessary materials and scoring keys.

The last learning experience also serves as the assessment and may be defined as the process used to determine the learner's level of mastery of a set of objectives. Measurement may take place prior to or following the completion of the module. That is, in the directions appearing at the beginning of the module, the learner is given the option of being assessed right away if he/she feels he/she can demonstrate the competency or proceeding through the module and then being assessed.

The last learning experience is provided to measure whether or not the learner can demonstrate the competency identified by the terminal performance objective. The assessment evaluates performance and is directly tied to the terminal performance objective.

Module Supplement

Supplementary printed materials needed by the person pursuing the module such as self-tests, keys to self-tests, information sheets, and performance rating scales are included in the Module Supplement.

Areas of Concern in the Installation of Performance-Based Curricula

There are obviously many issues and problems associated with installing a PBTE program. However, the literature as well as experience in this area seems to indicate that there are six primary areas of concern. These include: the identification of competencies; instructional materials; roles of faculty and students; interaction with various groups, institutions and agencies; instructional support; and costs. Of course, evaluation and certification are of equal importance but these will not be discussed as separate concerns since they seem to cut across many aspects of program implementation.

Identification of Competencies. When a performance-based teacher education program is being developed or plans are being formulated for an existing program to move in this direction, a primary concern is with the identification of competencies. Since teacher competencies serve as a foundation for PBTE, errors at this point may result in the establishment of a program that lacks validity. One of the major criticisms leveled at some PBTE programs is that they merely "teach the same (and perhaps irrelevant) content with a new and improved framework (Sinatra, 1973)." The key issue seems to be that of identifying "real" competencies, that actually maximize the probability of teaching success. Closely associated with this issue is the establishment of priorities for competencies. Given a comprehensive listing of valid competencies, how can a teacher education institution select those that are most beneficial to the student?

Instructional Materials. As a college or university moves forward with the business of implementing PBTE, an immediate need is felt to obtain and/or develop instructional materials. These generally take the form of modules (learning packages) and supporting mediation (e.g., videotapes, films, reference materials). Although there is general agreement among those in PBTE as to what constitutes a module's component parts, several questions may be raised about what it should actually do. For example, does the module "deliver" on a

certain important teacher competency or set of competencies? Is it functional and usable? Does it change teacher behavior? What are the effects of modularization on a grand scale? These as well as others are legitimate questions which may be raised about instructional materials that are typically used in a PBTE program.

Roles of Faculty and Students. The roles of faculty and students will most certainly change when a PBTE program is implemented. Or, put another way, if faculty and student roles are not revised the program is probably doomed to failure. One may wrongly assume that change is a relatively simple task. In fact, people (particularly faculty members) may not be receptive to the idea of being involved in "another" new approach to teacher preparation. Faculty may be threatened by the thought of losing a little personal autonomy while students might not relish interacting with instructional packages. Indeed, all who will be associated with a PBTE program can raise meaningful questions about their respective roles.

Interaction with Various Groups, Institutions, and Agencies. Closely aligned with the PBTE movement is the idea of increased interaction with various groups, institutions, and agencies. For example, performance-based certification being implemented in many states is serving to better align teacher education programs and certification requirements. Much collaborative work will surely need to be done before programs and certification are in alignment. Interaction with local education agencies will, likewise, be increased. PBTE has placed a great deal of emphasis upon field-centered instruction where the student will apply principles he has learned in an actual school setting. This may include many more instances of supervised teaching than would normally be found in a traditional teacher education program. The implications for interaction with local education agencies are obvious and, in some cases, difficult to predict. Logistics associated with field-centered instruction are often extremely complex, especially

for universities located in a more rural setting. Generally, areas in which increased interaction is necessary include teacher education institutions, local education agencies, state education agencies, and other interest groups (e.g., NEA, AFT, AVA, NCATE, AACTE). With the implementation of PBTE comes a need for increased interaction that is largely due to variance from "the traditional." Persons implementing PBTE programs may certainly ask what needs to be done to incure that proper liaison actually takes place.

Instructional Support. In order for any teacher education program to function properly, adequate instructional support must be provided. This may take the form of classroom space, audiovisual equipment, student records systems, resource centers, and similar items.

As with many instructional programs that break with tradition, PBTE requires that support be realigned to fit its unique needs. This realignment is, for the most part, necessitated because of a shift from traditional practices to mastery learning and individualized instruction. Since students will be learning at their own particular rates and demonstrated competence (rather than grades to serve as records of assessment), facilities must be available to meet their particular needs. Typically, a PBTE resource center, that contains relevant resources such as references and media, is made available to students. A resource person is generally located at the center to assist students in the completion of various module learning experiences. Of course, the lack of such a center may pose a problem to many teacher education institutions and some persons may question its practicality. Other potential problems in the instructional support area include, but are not limited to, making provisions for in-service teacher education, recording student mastery of various modules, and resolving conflicts between the academic calendar and variations in student progress.

Costs. A final area of concern is PBTE program costs. Many persons have negative feelings about this important aspect of PBTE implementation, particularly in light of recent budgetary cuts at various colleges and universities across the country. The primary issue associated with costs seems to be one of comparisons between PBTE and traditional programs. Persons inquiring about PBTE generally ask how much more it will cost. At this point in time it appears many are asking about increased institution budgets per se rather than costs in relation to benefits or effectiveness.

Strategies for Installing Performance-Based Curricula

There are several strategies which we feel may be employed when a college or university is implementing PBTE. These obviously parallel the areas of concern which were just mentioned and are meant to serve as guides for more detailed planning. Several strategies are presented for consideration. They are not meant to be completed in any particular order since each teacher education institution may choose to develop its own installation plan. These include:

- Identifying teacher competencies
- Establishing priorities for competencies
- Developing/obtaining instructional modules
- Orienting faculty members
- Orienting students
- Establishing liaison with various groups
- Establishing a resource center
- Developing and implementing a student records system
- Justifying costs

Each of the above appears to be an extremely important aspect of PBTE installation and must be addressed in some fashion as a program is being implemented. Further details regarding these points are presented elsewhere (Finch and Hamilton, 1973).

Some Final Thoughts

As the late Benjamin Rosner stated "competency-based teacher education is not an end in itself. It is a process of moving from the present ambiguous state of teacher education to a more clearly articulated program of professional education (Rosner and Kay, 1974)." Performance or competency-based teacher education has the potential to greatly improve vocational teacher preparation programs and we feel that our efforts in this area will assist teacher educators in building viable programs for their universities and colleges. As we continue to work with teacher education institutions in the testing and refinement of performance-based modules, it is hoped that much more useful information may be gathered regarding PBTE implementation. Ultimately, we hope that you, your students, and your student's students will all benefit from the work which has been accomplished in this area. The transition from traditional to performance-based teacher education is certainly not simple but we hope to make it less complex for those who are involved with PBTE program development.

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